

**Amendments to the Drawings**

Figures 1, 2, 3, 4, 5, 6, 7, and 8 have been amended to include the legend "Prior Art." No new matter is being introduced.

Attachment: Replacement Sheets  
Annotated Marked-Up Drawings

**REMARKS**

Claims 1-26 and 28-62 are pending in the application. Claims 1-26 and 28-62 stand rejected. Independent claims 1, 32 and 62 are being amended. Dependent claims 16, 18, 24, 25, 33-56, and 58-61 are also being amended. No new matter is believed introduced by way of the amendment.

In response to the present Office Action, Figures 1-8 are being amended to include the term "Prior Art". No new matter is being introduced by way of the amendment. Replacement Drawings, which include the Amendment to Figures 1-8, are being filed herewith.

Claims 33-56 were objected to because they incorrectly recite a dependency upon claim 31. These claims have been corrected in the Claim Listing above to depend directly or indirectly from claim 32. No new matter is being introduced by way of the amendment.

Claims 58-61 were also corrected to recite a direct or indirect dependency upon claim 57. No new matter is believed to be introduced by way of the amendment.

Claims 1-25 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Corrections to these Claims have been made in the Claim Listing above and are described below.

**Rejections Under 35 U.S.C. §102(e)**

Claims 1-4, 7, 12, 15-16, 18-19, 21-22, 32-35, 38, 43, 47, 50, 52-53, and 62 were rejected under 35 U.S.C. §102(e) as being unpatentable over Rabipour *et al.* (U.S. Patent Number 6,011,846), hereinafter referenced as "Rabipour."

Claim 1 as amended in the Claim Listing above recites,

In a communications system for transmitting a near end digital signal using a compression code comprising a plurality of parameters including a first parameter, said parameters representing an audio signal comprising a plurality of audio characteristics, said compression code being decodable by a plurality of decoding ~~steps~~ procedures, said communications system also transmitting a far end digital signal using a compression code, apparatus for reducing echo in said near end digital signal comprising:

~~a processor~~ a reading unit responsive to said near end digital signal to read at least said first parameter of said plurality of parameters,

a decoder to perform at least one of said plurality of decoding ~~steps~~

procedures on said near end digital signal and said far end digital signal ~~to~~ and generate at least partially decoded near end signals and at least partially decoded far end signals, ~~and~~

responsive to said at least partially decoded near end signals and at least partially decoded far end signals, an adjustment unit to adjust said first parameter to generate an adjusted first parameter,

an echo likelihood estimator to estimate the echo in said near end signal; ~~and~~ responsive to said echo estimate, a replacement unit to replace at least said first parameter with said adjusted first parameter in said near end digital signal to reduce echo in the near end digital signal, and

a transmitter to transmit said near end digital signal with reduced echo.

where the strikethrough words indicate elements being deleted by way of amendment, and the underlined words indicate elements being added by way of amendment. Support for the amendment is found in the specification as originally filed at least on page 17, lines 1-4:

Algorithm 44 generates an echo likelihood signal at least estimating the amount of echo in the near end digital signal. The echo likelihood signal varies over time since the amount of echo depends on the far end speech signal. The echo likelihood signal is used by algorithm 44 to adjust the parameter(s) read by algorithm 44.

Referring to Applicants' Fig. 13, direct modification of coded parameters based on the echo likelihood is illustrated. The algorithm 44 reads at least a first of the parameters received at terminal 20. Partial decoders at least partially decode the far-end and near-end signals. The echo likelihood signal is generated by at least estimating the amount of echo in the near-end signal. The echo likelihood is estimated for each speech subframe and is used by the algorithm 44 to adjust the parameters read by algorithm 44. The adjusted parameters are written into the near-end signal, creating an adjusted near-end signal, which is transmitted from the terminal 22 to the network 24. Thus, Applicants' invention as claimed in amended Claim 1 estimates the echo likelihood for each frame of the near-end signal and creates an adjusted near-end signal responsive to estimates of the amount of echo (i.e., echo likelihood) in the near-end signal.

In contrast, Rabipour applies a simpler technique of applying echo suppression, which makes a decision regarding the adjustment of the parameters of a frame by estimating the energy of echo based on the energy within a spectrum. Based on the estimated echo energy, Rabipour declares an echo or a no-echo condition. If sufficient echo is detected, Rabipour adjusts the

parameters of the frame. In the no-echo case, Rabipour allows the parameters to pass without any modification.

Thus, Applicants' invention as claimed in amended Claim 1 distinguishes over Rabipour in that it employs estimates of the echo likelihood for each frame of the near-end signal to create an adjusted near-end signal. While Rabipour estimates the echo energy based on the energy within a spectrum, Rabipour neither discloses estimating the echo likelihood for each frame nor does Rabipour's system contain the means to adjust the near-end signal in response to the estimated echo likelihood measure.

In view of the foregoing, Applicants respectfully submit that Claim 1 as now amended overcomes the rejection under 35 U.S.C. §102(e).

Independent Claims 32 and 62 are being amended in the Claim Listing above to include similar elements as now amended Claim 1 and should be allowed for similar reasons.

Because Claims 2-4, 7, 12, 15-16, 18-19, and 21-22 depend from amended claim 1 and Claims 32-35, 38, 43, 47, 50, and 52-53 depend from amended claim 32, Applicants respectfully submit that these claims should be allowed for at least the same reasons as the base claims from which they depend.

#### **Rejections Under 35 U.S.C. §103(a)**

Claims 5-6, 13-14, and 36-37 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabipour in view of Strawczynski *et al.* (U.S. Patent Number 6,138,022), hereinafter referenced as "Strawczynski."

Claims 8-9 and 39-40 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabipour in view of Gritton *et al.* (U.S. Patent Number 5,857,167), hereinafter referenced as "Gritton."

Claims 10-11, 20, 23-25, 41, 42, 46, 49, 51 and 54-46 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabipour in view of Chen *et al.* (U.S. Patent Number 5,651,091), hereinafter referenced as "Chen."

Claim 17 was rejected under 35 U.S.C. §103(a) as being unpatentable over Rabipour in view of Christensson *et al.* (U.S. Patent Number 6,510,224), hereinafter referenced as "Christensson."

Claims 26, 28-31, and 57-61 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabipour in view of Applicants' Admitted Prior Art, hereinafter referenced as "AAPA."

Claims 44-45 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabipour in view of Chen and further in view of Strawczynski.

Claim 48 was rejected under 35 U.S.C. §103(a) as being unpatentable over Rabipour in view of Chen and further in view of Christensson.

These rejected claims are dependent from amended Claims 1 or 32. As explained in the previous section, Rabipour does not teach all of the elements recited in now amended base Claims 1 and 32, namely, estimating the echo likelihood for each frame and adjusting the near-end signal in response to the estimated echo likelihood measure. These limitations of Rabipour are not cured by Strawczynski, Gritton, Chen, Christensson, or AAPA. Therefore, without discussing the merits of the reasons behind the rejection of these claims, it is Applicants' position that these claims are allowable over Rabipour in view of Strawczynski, Gritton, Chen, Christensson, and AAPA. Accordingly, Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of these claims be withdrawn.

#### **Rejections Under 35 U.S.C. §112, First Paragraph**

Claims 1-25 were rejected under 35 U.S.C. 112, first paragraph as failing to comply with the enablement requirement because claim 1 is said to be a "single means" claim.

Corrections to claim 1 have been made in the Claim Listing above for purposes of expediting prosecution. Accordingly, Claim 1 is believed to overcome the rejection under 35 U.S.C. 112, first paragraph. Therefore, Applicants respectfully request withdrawal of the rejection of this claim.

Because Claims 2-25 depend from amended claim 1, Applicants respectfully submit that these claims should be allowed for at least the same reasons as base Claim 1.

#### **Information Disclosure Statement**


An Information Disclosure Statement (IDS) is being filed concurrently herewith. Entry of the IDS is respectfully requested.

**CONCLUSION**

In view of the above amendments and remarks, it is believed that all now pending claims, claims 1-26 and 28-62, are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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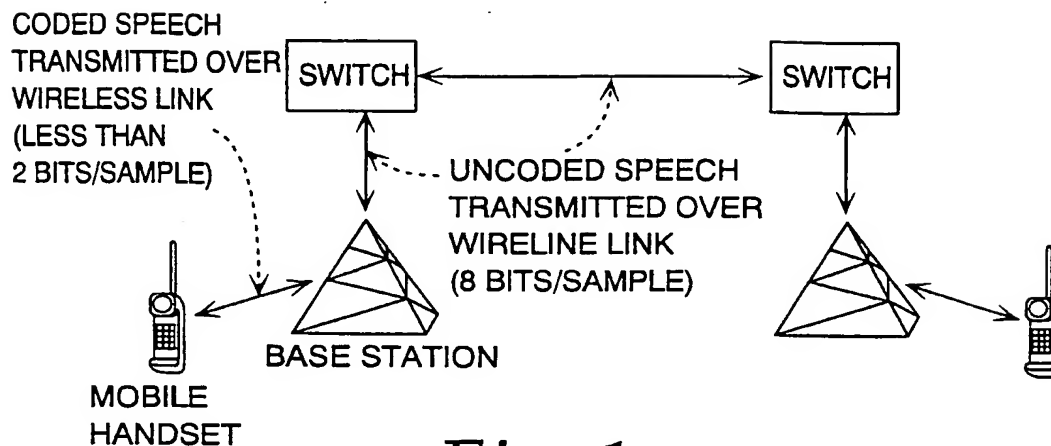
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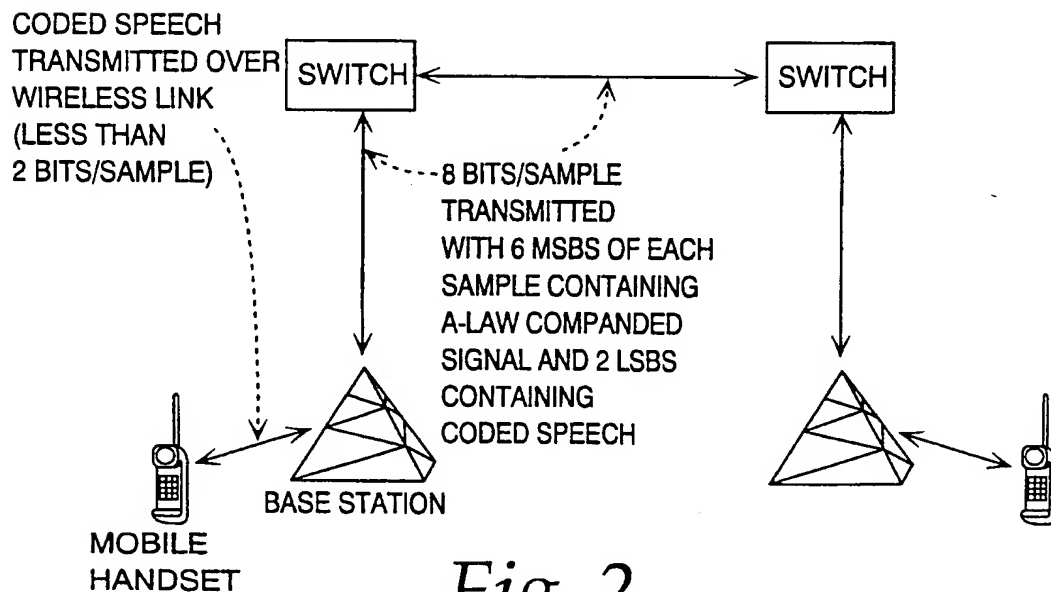
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*Fig. 1*  
PRIOR ART



*Fig. 2*

PRIOR ART

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PRIOR ART

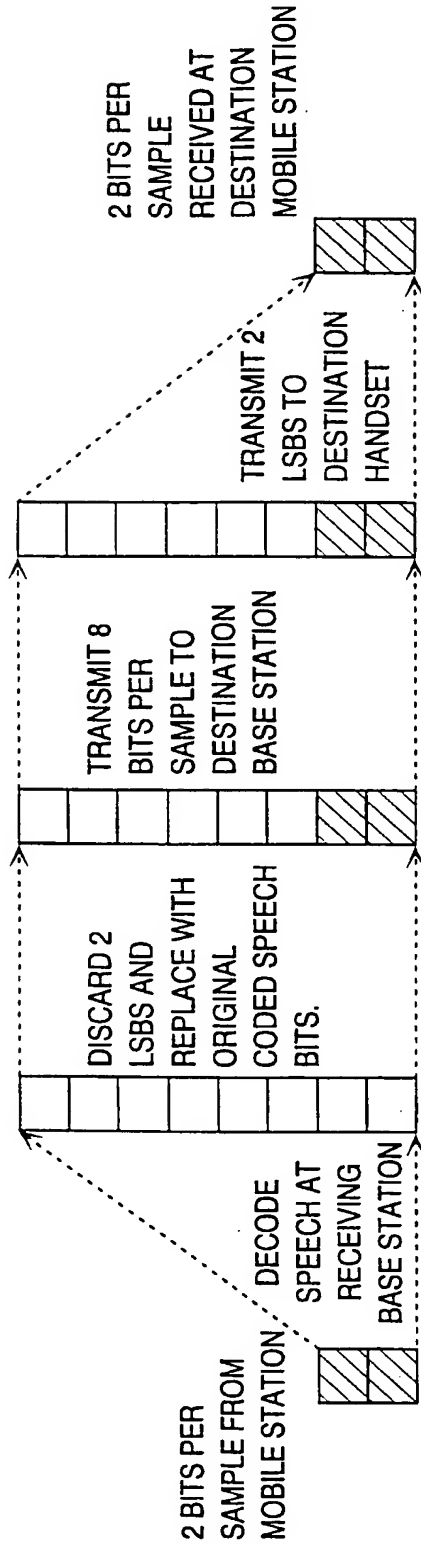


Fig. 3

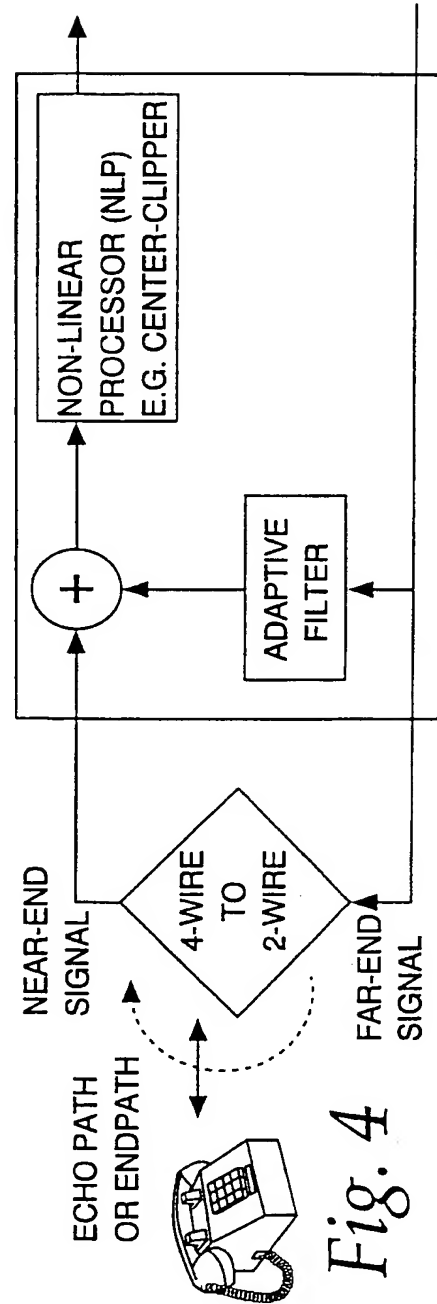
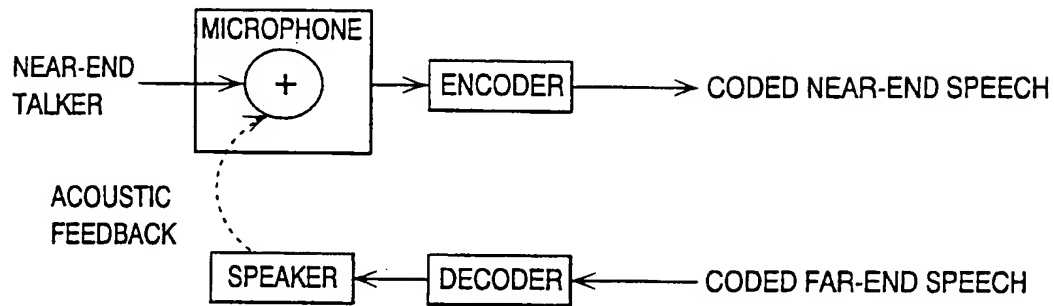


Fig. 4

PRIOR ART

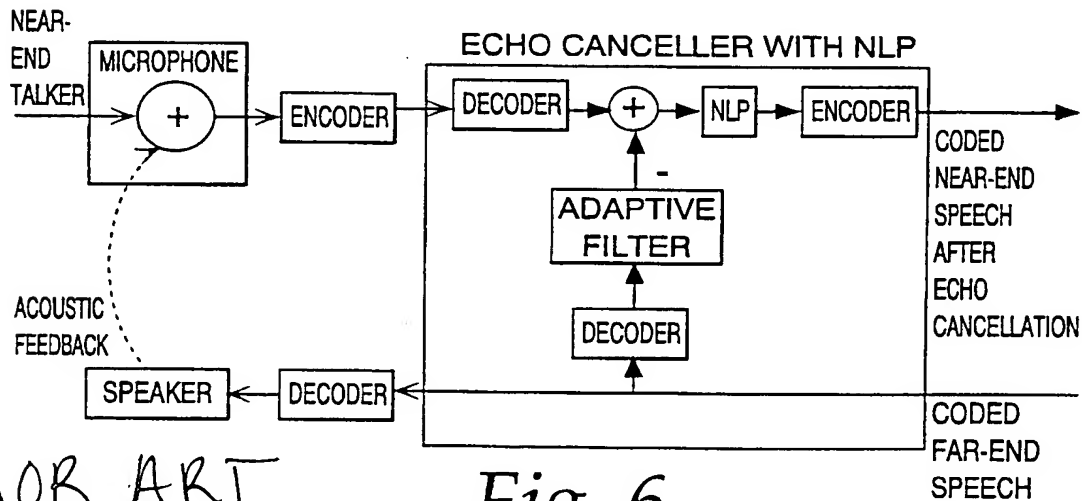


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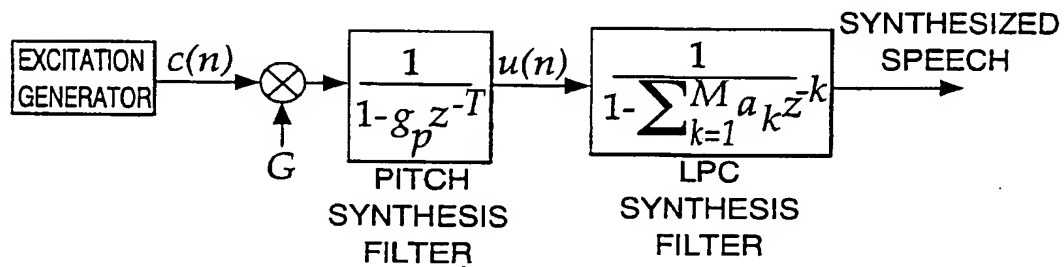
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Fig. 5



PRIOR ART

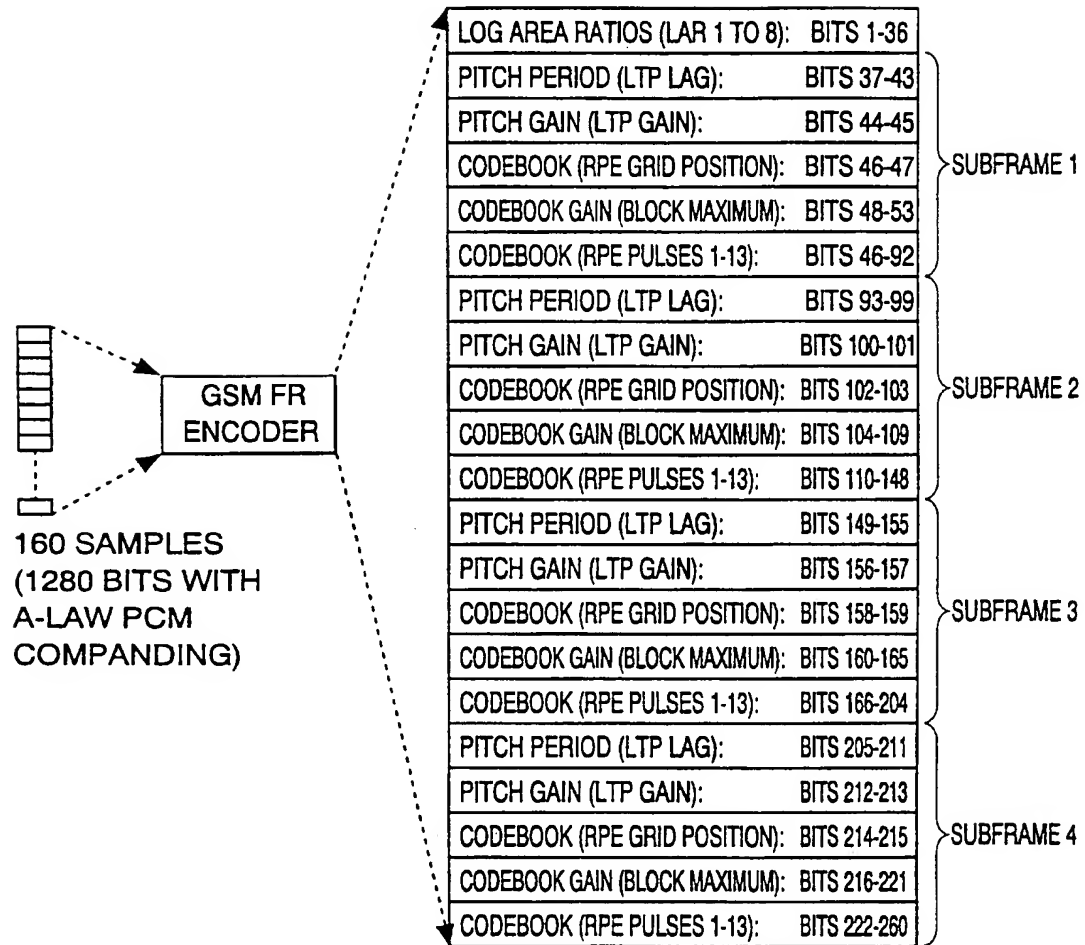
Fig. 6



PRIOR ART

Fig. 7

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*Fig. 8*  
PRIOR ART